

WHAT IS CLAIMED IS:

1. A communication system which executes data communication of a parallel combinatory spread spectrum scheme between a transmitter and a receiver,

5 the transmitter comprising:

an acquiring unit configured to acquire radio channel quality information by measuring a radio channel quality when the transmitter receives a signal;

an information generation unit configured to
10 generate first physical layer control information for control of a physical layer based on the radio channel quality information at a first control timing which fails to be in cooperation with a dedicated channel for the control of the physical layer; and

15 a first transmission unit configured to transmit, to the receiver, the first physical layer control information by selected spreading-code data of the parallel combinatory spread spectrum scheme, and

the receiver comprising:

20 a first receiving unit configured to receive the first physical layer control information by the selected spreading-code data of the parallel combinatory spread spectrum scheme; and

a physical layer control unit configured to
25 control the physical layer between the receiver and the transmitter based on the first physical layer control information.

2. The system according to claim 1, wherein if the radio channel quality measured in generating the first physical layer control information is higher than radio channel quality at an immediately preceding
5 timing, the information generation unit generates the first physical layer control information which increases the control of the physical layer by a unit control amount, and if the radio channel quality measured in generating the first physical layer control
10 information is poorer than the radio channel quality at the immediately preceding timing, the information generation unit generates the first physical layer control information which decreases the control of the physical layer by the unit control amount.

15 3. The system according to claim 1, wherein the information generation unit generates the first physical layer control information in correspondence with the radio channel quality information.

20 4. The system according to claim 1, wherein the acquiring unit acquires, as the radio channel quality information, SIR (Signal-to-Interference Ratio) information which is obtained by measuring a receiving power of a common pilot signal transmitted from the receiver to the transmitter.

25 5. The system according to claim 1, wherein the physical layer control unit sets, based on the first physical layer control information, a transmission data

rate of data to be transmitted to the transmitter.

6. The system according to claim 5, wherein
the receiver further comprises a transmission unit
configured to transmit, to the transmitter, the data
5 which is set to the transmission data rate and spread
by a spread spectrum scheme.

7. The system according to claim 1, wherein
the transmitter further comprises a second
transmission unit configured to transmit, to the
10 receiver, second physical layer control information for
the control of the physical layer over the dedicated
channel,

the information generation unit generates the
second physical layer control information based on the
15 radio channel quality information at a second control
timing which is in cooperation with the dedicated
channel and generates the first physical layer control
information based on the radio channel quality
information at the first control timing which fails to
20 be in cooperation with the dedicated channel,

the receiver further comprises a second receiving
unit configured to receive the first physical layer
control information over the dedicated channel, and

the physical layer control unit controls the
25 physical layer between the receiver and the transmitter
based on the first physical layer control information
and the second physical layer control information.

8. The system according to claim 7, wherein the information generation unit generates the second physical layer control information in correspondence with the radio channel quality information.

5 9. The system according to claim 7, wherein the physical layer control unit sets, based on the first physical layer control information and the second physical layer control information, a transmission data rate of data to be transmitted to the transmitter.

10 10. A transmitter comprising:

an acquiring unit configured to acquire radio channel quality information by measuring a radio channel quality when the transmitter receives a signal;

an information generation unit configured to
15 generate first physical layer control information for control of a physical layer based on the radio channel quality information at a first control timing which fails to be in cooperation with a dedicated channel for the control of the physical layer; and

20 a first transmission unit configured to transmit, to the receiver, the first physical layer control information by selected spreading-code data of a parallel combinatory spread spectrum scheme.

25 11. The transmitter according to claim 10, which further comprises a second transmission unit configured to transmit, to the receiver, second physical layer control information for the control of the physical

layer over the dedicated channel of physical layer control,

wherein the information generation unit generates the second physical layer control information based on the radio channel quality information at a second
5 control timing which is in cooperation with the dedicated channel and generates the first physical layer control information based on the radio channel quality information at the first control timing which
10 fails to be in cooperation with the dedicated channel.

12. A receiver comprising:

a first receiving unit configured to receive first physical layer control information for control of a physical layer by selected spreading-code data of a
15 parallel combinatory spread spectrum scheme; and

a physical layer control unit configured to control the physical layer between the receiver and a transmitter based on the first physical layer control information.

20 13. The receiver according to claim 12, which further comprises a second receiving unit configured to receive second physical layer control information for the control of the physical layer over a dedicated channel,

25 wherein the physical layer control unit controls the physical layer between the receiver and the transmitter based on the first physical layer control

information and the second physical layer control information.

14. The receiver according to claim 13, wherein the physical layer control unit sets, based on the
5. first physical layer control information and the second physical layer control information, a transmission data rate of data to be transmitted to the transmitter.